

UK Climate Projections User Interface

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<http://ukclimateprojections-ui.defra.gov.uk>



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Overview

- What are the UK Climate Projections
- Quick look at the UKCP User Interface
- UKCP-UI Architecture
- Deployment Experiences
- Lessons for supporting WG2 & 3

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UK Climate Projections

- Funded by UK Department of Environment DEFRA
- Designed to serve as the evidence base for climate change mitigation decisions by public and private UK bodies
- 7 years work by UK Met. Office
- 2 year project at CEDA to build the user interface UKCP-UI

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UKCP09 Data Product

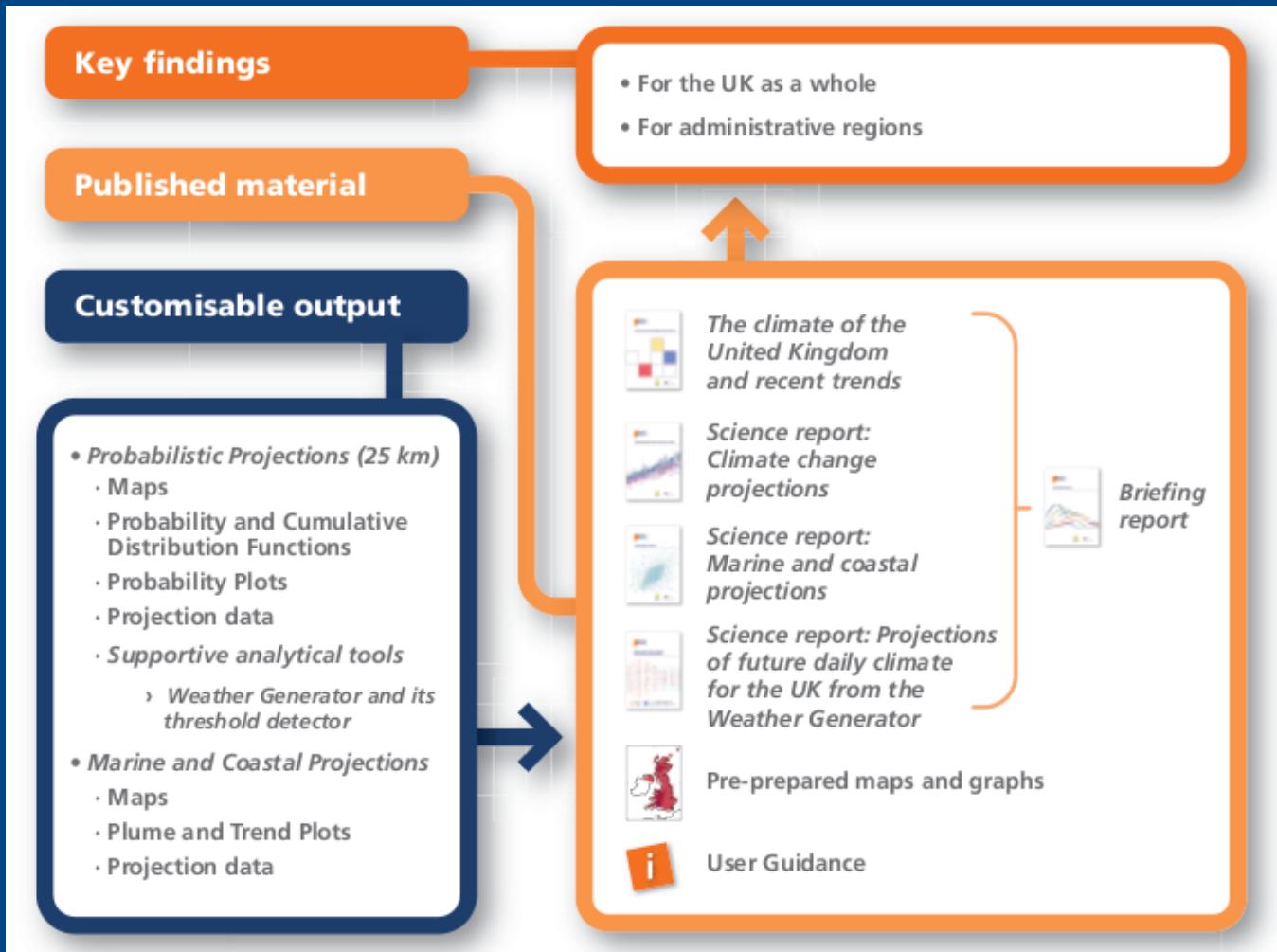
- Probabilistic:
 - Ensemble of model runs
 - Summarised into CDFs and PDFs
- Regional and sub-regional resolution
 - 25km grid over land
 - Administrative regions and river basins
 - Statistical down-scaling to 5km with a Weather Generator
- Further processing of Weather Generator Output

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UKCP09 Reports

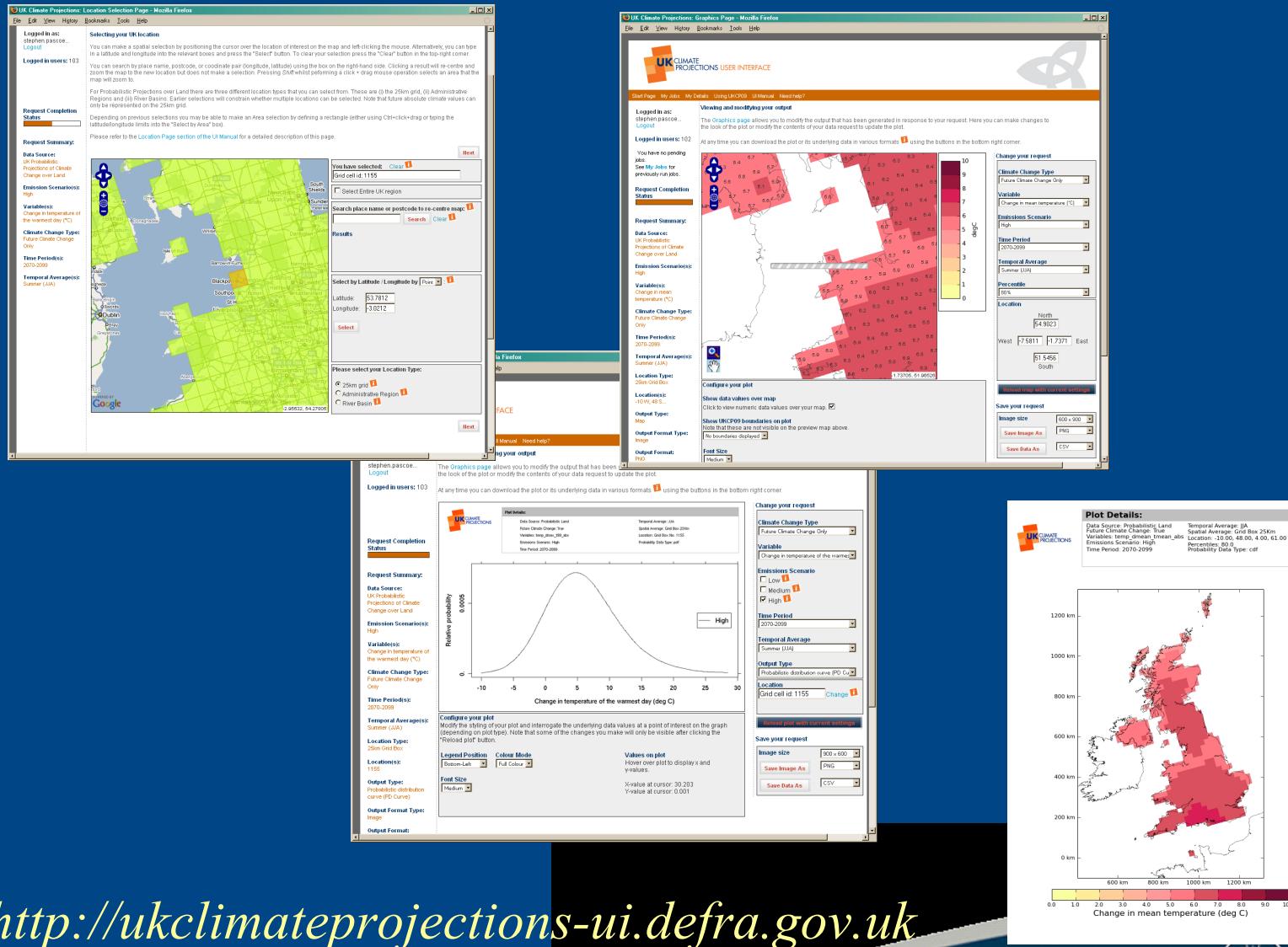


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UKCP-UI quick look



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Data product delivery

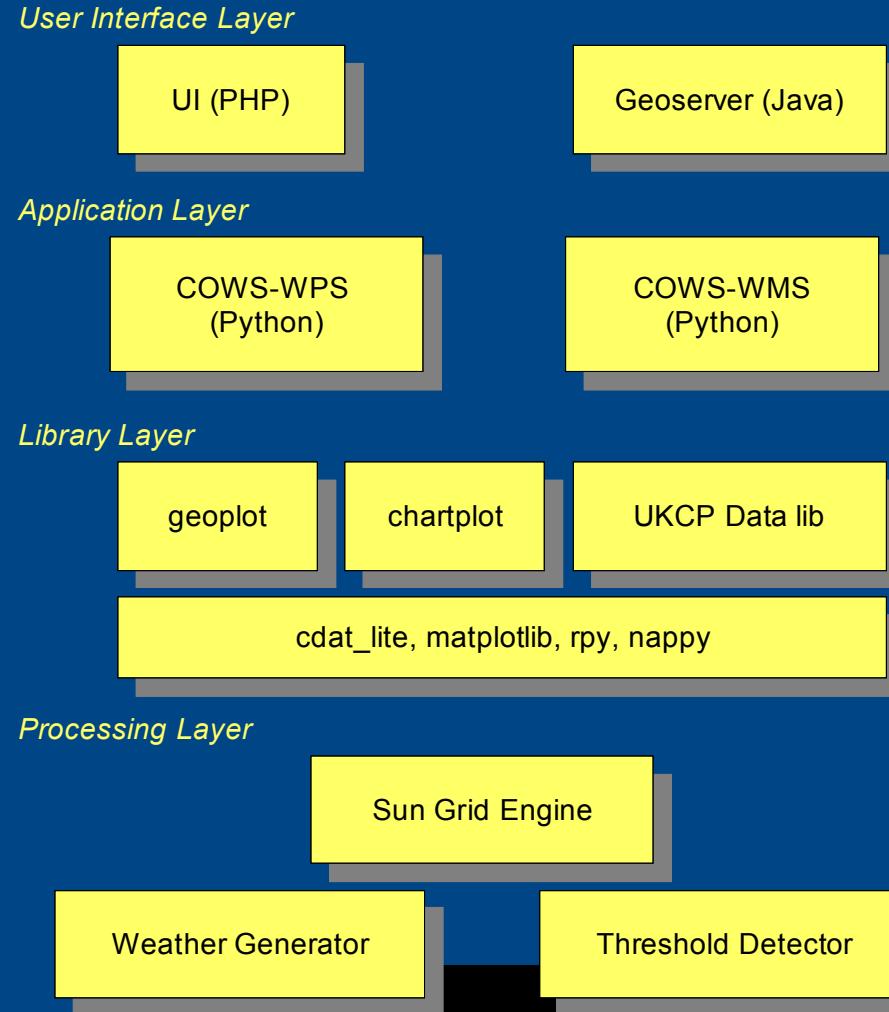
- The UKCP output formats
 - Publication quality plots: PNG, PDF, PS, JPG
 - CF-NetCDF. via subsetting with cdat_lite (cdms)
 - CSV via nappy NetCDF<->NASA Ames library
 - Shapefiles via shapelib
- Delivered in a zipfile with project-specific metadata
- Duplicate outputs avoided using caching
- Resubmit jobs via the “MyJobs” page
- Share some jobs via URLs

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Architecture

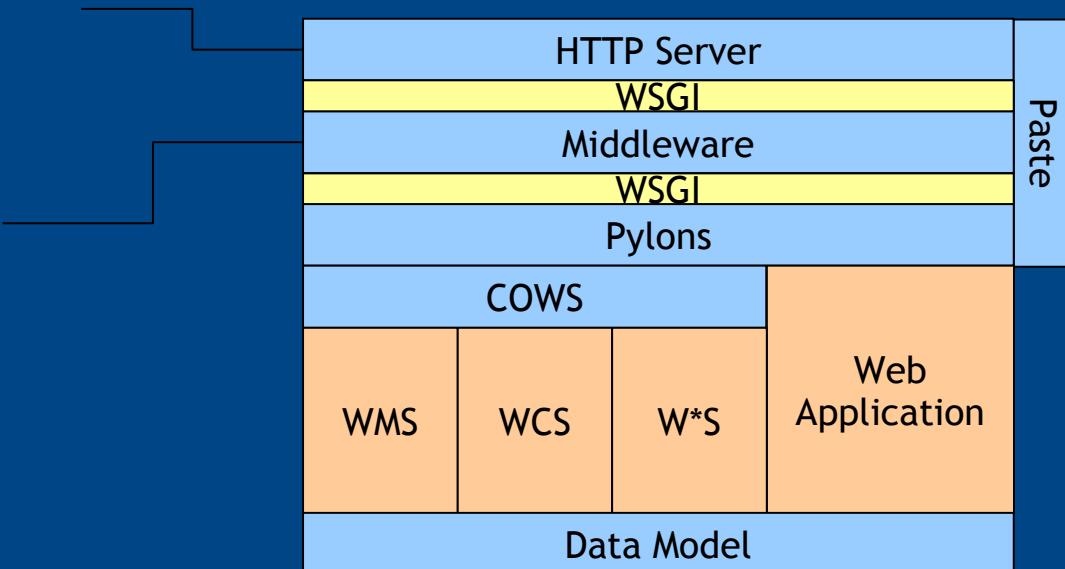


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CEDA OWS Framework

Apache + mod_python,
FastCGI, Python HTTPD

e.g. Authentication



- Library (blue square)
- Standard Interface (yellow square)
- Application code (orange square)

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Web Processing Service

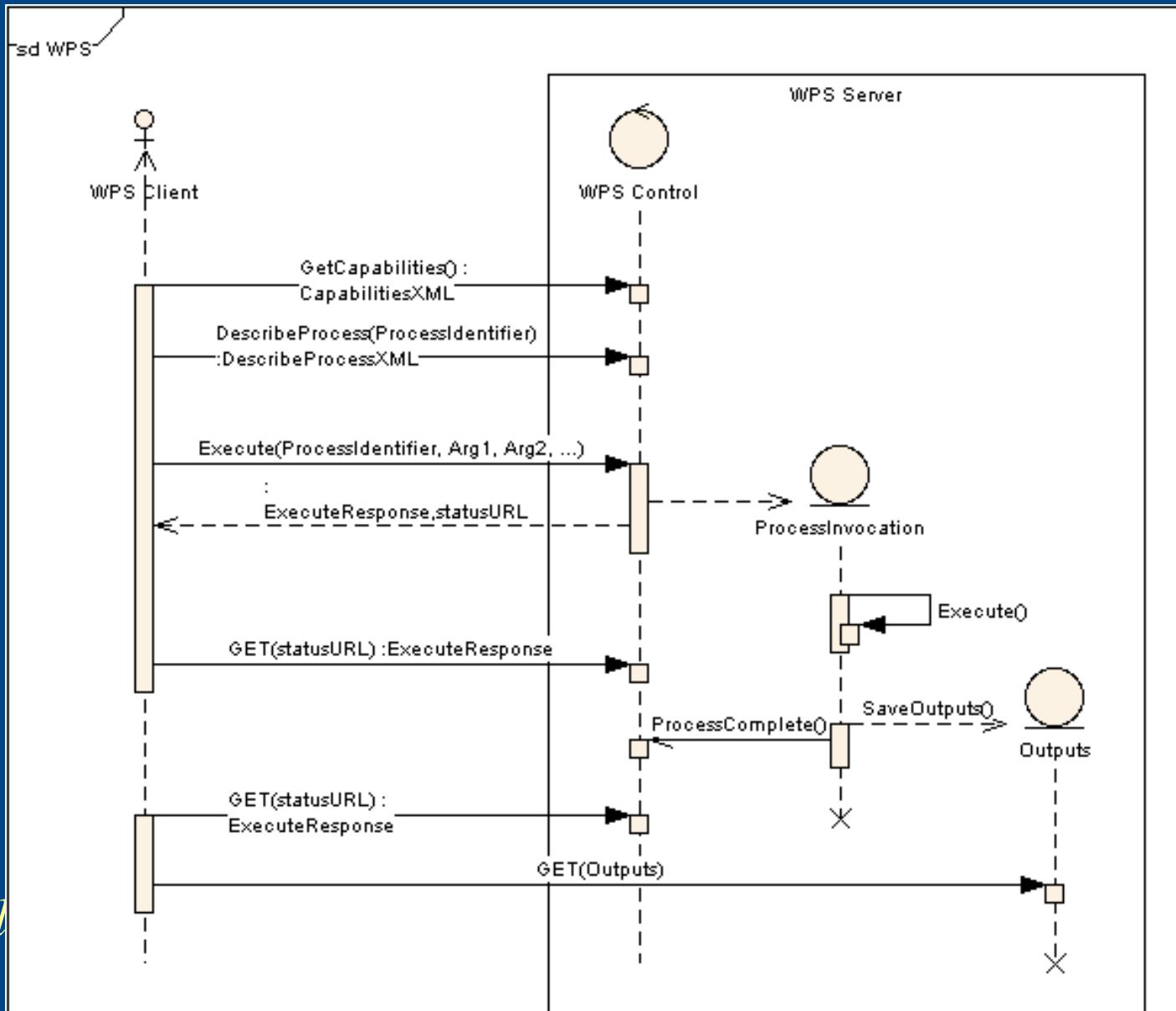
- OGC Standard for asynchronous processing
- A WPS service offers a set of **Processes** that operate on **Inputs** producing **Outputs**
- Supports process status polling
 - Percent complete
 - Outputs available

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WPS Protocol



COWS WPS

- COWS handles OGC interfaces
- “Plug-In” process modules
 - Synchronous processes run in the server
 - Asynchronous processes run via Sun Grid Engine
 - Cost estimation
- SGE scheduling
 - Configurable queues for fast and slow jobs
 - Control number of simultaneous requests
 - Processing occurs on separate nodes

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Requirements shift

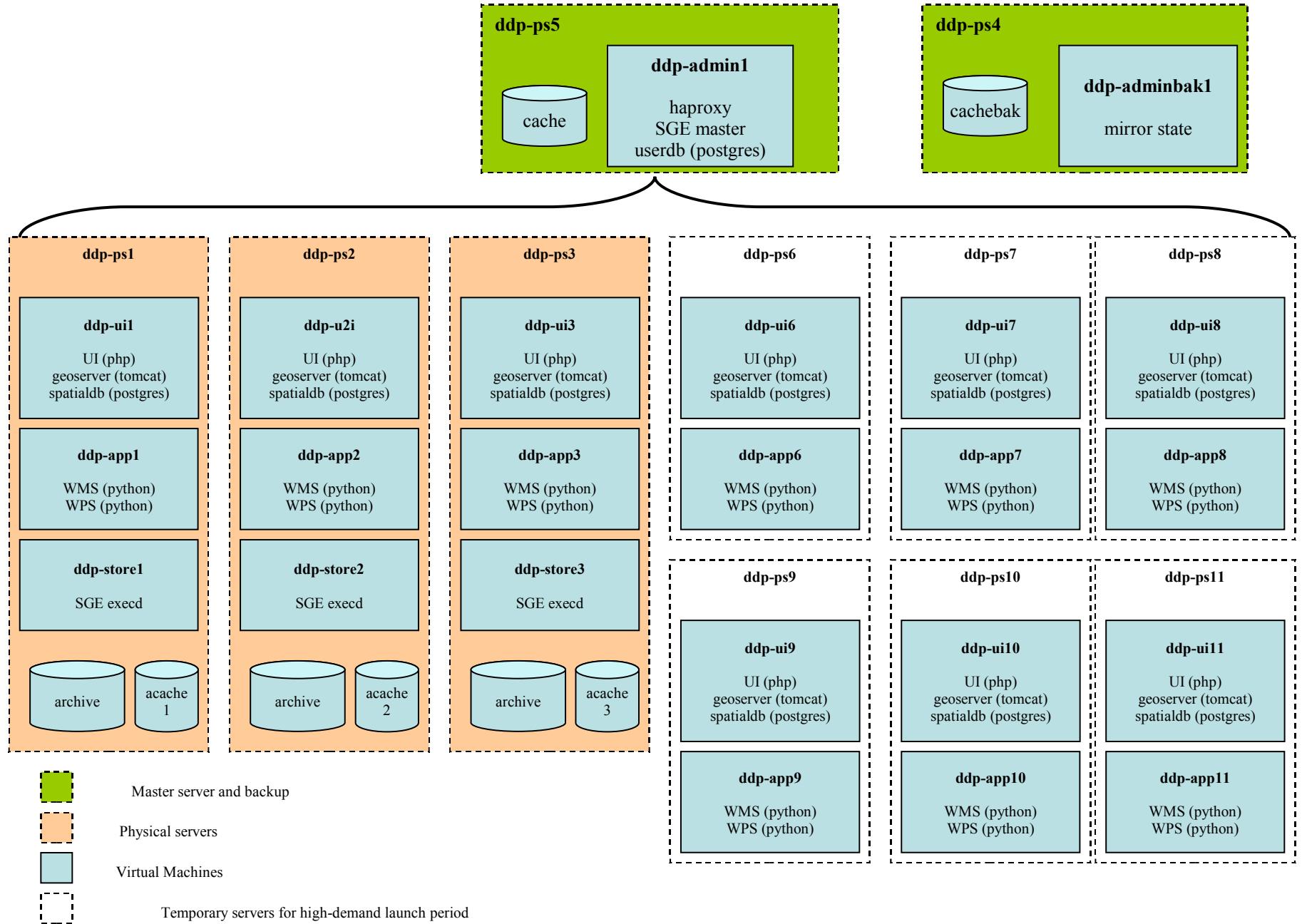
“We need 1,000 simultaneous users”

- Extensive system testing:
 - Login, Request Builder, WMS, WPS, download
- Scaled up Xen VM system x3
- Found several critical optimisations

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Toward supporting WG2 & 3

- We had the advantage of full customer engagement
- OpenSource GIS can be integrated with climate data services
- Many tools developed for UKCP are applicable to the Impacts commun
 - WPS
 - Nappy
 - Geoplot

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Thank you

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